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Development of planning of the integrated care for older people in China: a theory of change approach

Biyan Jiang[1,3], Baiyu Li[4], Shijia He[1], Lingyan Chen[1,3], Shulan Yang[6], Jiabin Liu[7], Weimin Lou[1,5], Yiyu Hu[1], Xiaoqing Jin[2*] and Caixia Liu[1*]

Abstract

Background Integrated Care for Older People (ICOPE), developed by the World Health Organization (WHO) with a global perspective, faces varying degrees of barriers to implementation, particularly in middle-and low-income countries. Therefore, as with other new public service interventions, we draw on established integrated care interventions to design a Theory of Change (ToC) model for ICOPE, and to propose methods and pathways for adapting community-based integrated care models for older people (OP) to specific contexts, thereby updating and enhancing the implementation of ICOPE.

Methods An initial ToC for the ICOPE was drafted based on the WHO guidelines and published literature, and synthesizing the results of semi-structured interviews, group discussions. A total of 36 healthcare stakeholder experts in geriatric nursing, geriatric care and chronic disease management, rehabilitation and quality of life, and psychiatric-mental health were recruited to participate in a 5-stage ToC group workshop conducted consecutively. Each workshop has 2–3 facilitators, and lasts from 60 to 120 min. In multiple workshops, the experts discussed the causal pathway, the interventions needed to activate it, the underlying principles and assumptions, evaluated and refined them, and finally reached consensus.

Results The ToC design has improved the ICOPE program, identifying the resources, long-term outcomes, and impacts required for the implementation of ICOPE in a specific setting, and clarifying the specific components of the integrated care interventions, such as materials, procedures, and intervention providers. The localized, OP-centred model of integrated home care developed in our study may contribute to healthy ageing through four potential long-term outcomes: (1) reduction of unnecessary hospitalizations and increased utilization of referral services, (2) enhancement of self-care capacity to prevent, reverse, or delay the decline of intrinsic capacity in OP, (3) improvement of the quality of life of OP living at home, and (4) reduction of caregiving burdens and improvement in the level of caregiving.

*Correspondence:
Xiaoqing Jin
zjyyjxq@163.com
Caixia Liu
zjyylcx@126.com

Full list of author information is available at the end of the article

Conclusion The ToC is effective in identifying key characteristics of resources, interventions, impact, and outcomes of integrated care for OP. Our ICOPE program has been strengthened by ToC, which forms an integrated care model for assessment, planning, implementation, and evaluation, adapted to a specific setting, and provides guidance for other areas in similar settings.

Keywords Integrated care for older people, Home care, Community health services, Theory of change, Workshop

Introduction

According to the World Health Organization (WHO) demographics, the number of people over the age of 60 is projected to double to 2.1 billion by 2050, with 80% of them living in low- and middle-income countries [1]. China is one of the fastest aging countries in the world. By the end of 2035, there will be approximately 400 million people over the age of 60, accounting for 30% of the total population [2]. The increased life expectancy and the sharp increase in the number of OP with chronic comorbidities, disabilities, and dementia have led to a rapid rise in the demand for and cost of long-term care, which has undoubtedly had a significant impact on the health care system [3]. To respond to this challenge, the WHO has developed a specific healthcare model for geriatric care-the Integrated Care for Older People (ICOPE), to prevent, reverse, or delay the decline in the intrinsic capacity of OP to achieve healthy aging [4].

Following the United Nations principle of universal healthcare coverage, healthy aging is a necessary condition for the achievement of the Sustainable Development Goals. Many factors influence healthy aging, especially the physical and social environment of OP, including family, neighborhood, and community, as well as external interventions, which are important determinants [5]. Therefore, the ICOPE is community-based and aims to enhance the service delivery capacity of the basic health system by establishing a person-centered, long-term, and integrated model of geriatric care [4]. As an integrated personal care tool focused on healthy aging, the ICOPE consists of five important steps: (a) searching for and screening OP with intrinsically diminished capacity; (b) conducting person-centered assessments; (c) developing individualized care plans with a multidisciplinary team; (d) implementing care pathways and regular monitoring linked to specialized geriatric care; and (e) integrating comprehensive care with community services [6]. To assess the readiness and feasibility of implementing the ICOPE approach at the service and system levels, pilot sites in Canillo, Andorra; Chaoyang District, Beijing, China; Occitanie, France; and Rajasthan, India, all engaged in the preparation phase of the ICOPE implementation pilot programme. The pilot programme demonstrated that ICOPE is feasible across various contexts and can be optimized through local co-design and adaptation [7]. However, the current development of healthy aging policies is still very uneven and uncoordinated, mainly involving developed countries. The ICOPE, which is developed with a global macro perspective, is formulated for all countries and does not take into account regional variability. As a result, it still faces different levels of barriers to implementation in different regions, especially in low-and middle-income countries [8].

Due to the continuous intensification of the aging population in China, many scholars have conducted research and validation on various aspects of ICOPE. However, there are relatively few interventional studies, most of which are still in the planning stage, and mainly focus on the first three steps of the ICOPE process [9]. The only study that has completed all five steps was conducted in Beijing's Chaoyang District, which was mentioned earlier in the preparation phase of the ICOPE pilot programme. Although this study introduced the effectiveness and feasibility of the five steps of ICOPE, it did not explain how the five steps are connected [10].

While enhancing the ICOPE theory and design for in-country evaluation to improve practice is inherently challenging, especially when there are numerous constraints such as the complexity of service integration and the need for community participation and collaboration, various theoretical frameworks have been utilized to develop and test interventions. Among these frameworks are the Logic Model, Program Theory, System Dynamics, and notably, the Theory of Change (ToC), which also plays a role in this context [11]. The ToC provides a roadmap for how a particular intervention or series of interventions is expected to achieve specific development changes, based on causal analysis derived from existing evidence [12]. ToC is particularly suited for complex, multifaceted initiatives because it encompasses multiple levels of implementation and connects community-wide strategies with direct service delivery; it has distinct advantages in context analysis, elucidation of causal mechanisms, and stakeholder dialogue. ToC can help determine how interventions can achieve desired long-term outcomes through intermediate logic sequences, providing important guidance for policy innovation and localization, and effectively improving the adaptability of theories. The core strength of the ToC approach lies in its ability to provide a clear logical framework that helps project teams and stakeholders understand the various aspects of complex issues and how to achieve anticipated changes through a series of planned actions. In this way, ToC contributes to increased transparency, sustainability, and

fosters continuous learning and improvement in projects [13, 14]. The WHO encourages 'trailblazer' countries to use the theories of change to improve the ICOPE based on certain in-depth understanding of local health-related factors, either negative (disability discrimination, economic level) or positive (strong support networks) [15, 16]. Therefore, in this study by building on existing evidence, we identified potential limitations and challenges, assessed the impacts of the context and the expected mechanisms by which interventions might make a difference, and ultimately developed a theory and design for the ICOPE in China.

Methods

Study design and setting

We applied an observational study design combining multiple qualitative data methods recommended by the WHO ICOPE guidelines integrated with a ToC approach. This study systematically reviewed the existing literature on the provision of integrated care services for OP in primary care by searching databases, literature screening, data extraction and quality assessment to form a manuscript on integrated care services for OP, which provides a theoretical basis for a ToC on integrated care for OP. Semi-structured interviews were conducted with OP and family members to understand their needs and expectations of integrated care services. The results of the interviews were extracted and mapped to integrated care services for OP to improve the relevance and effectiveness of care services. Based on the findings from the systematic review, qualitative interviews and group discussions, the development of a ToC for integrated care of OP provided a clear framework that articulated a pathway from inputs to outputs to final outcomes, including specific activities, expected results and impacts. It helped us to systematically plan and implement integrated care interventions, methodically carry out interventions, and monitor its progress, thereby increasing the effectiveness and actionability of the integrated care interventions. Finally, professionals and other stakeholders are invited to participate in a workshop to discuss the rationality and feasibility of the ToC model, collect feedback, and make adjustments based on the feedback to optimize the ICOPE's ToC theoretical model. Figure 1 describes the comprehensive development and modeling process of the ToC. It was a two-year (from January 2022 to December 2023) study conducted in Zhejiang Province, China. For reporting, we followed the Comprehensive Standardized Research Inventory for Qualitative Reporting and the Template for Intervention Description and Replication(TIDieR) [17, 18].

Overall and sampling

Recruitment of qualitative interviewees

We conducted individual semi-structured face-to-face interviews with OP and their family caregivers for identifying the qualitative interviewees. Those of the OP with specific individual characteristics (age, gender, education, number of children, etc.) were considered as eligible to be selected with maximum differentiation. Then, our investigators approached the eligible OP and asked if they or their family caregivers were interested in participating the study. All the qualitative interviewees were recruited from the community. We make sure that they are part of our development of the care intervention model and get fully engaged during the development process rather than for achieving a data saturation.

Stakeholder identification and recruitment

Based on the information of the stakeholders involved in similar previous studies [19], we identified a range of the stakeholders who are interested in the future of integrated care for OP in the community and recruited them as participants, in addition to the OP and their caregiver interviewees. A total of 36 participants were invited from them with a range of representations including researchers, healthcare professionals with expertise in geriatric care, community councils, government officials, those from the private sector, caregiver representatives, and social volunteer representatives. From the perspective of research areas coverage, they included geriatric nursing, public health management, geriatric care and chronic disease management, rehabilitation and quality of life, evidence-based care, geriatric psychiatric-mental health, hospice, rehabilitation therapy, pharmacists, dietitians, and counselors. The researchers were contacted by e-mail or telephone call, and it is worth noting that although they gave a positive response to the invitation and participated in at least one of the ToC group workshops, not all of them participated fully in all the workshops (Table 1).

Data collection

Through the case study of qualitative interviews, the items of what older participants think their needs for home nursing care, what nursing outcomes are important to them, and how to improve the health care delivery capacity of community primary health service centers were explored. The participants did not have to share their personal experiences when sensitive topics were covered during the interview. Face-to-face and structured ToC workshops were conducted for research groups, professionals, and stakeholders. By identifying the expected impact and long-term outcomes of the intervention program of integrated care of OP, we can then "work backward" to derive the prerequisites or intermediate outcomes needed to achieve the outcomes. Based on the

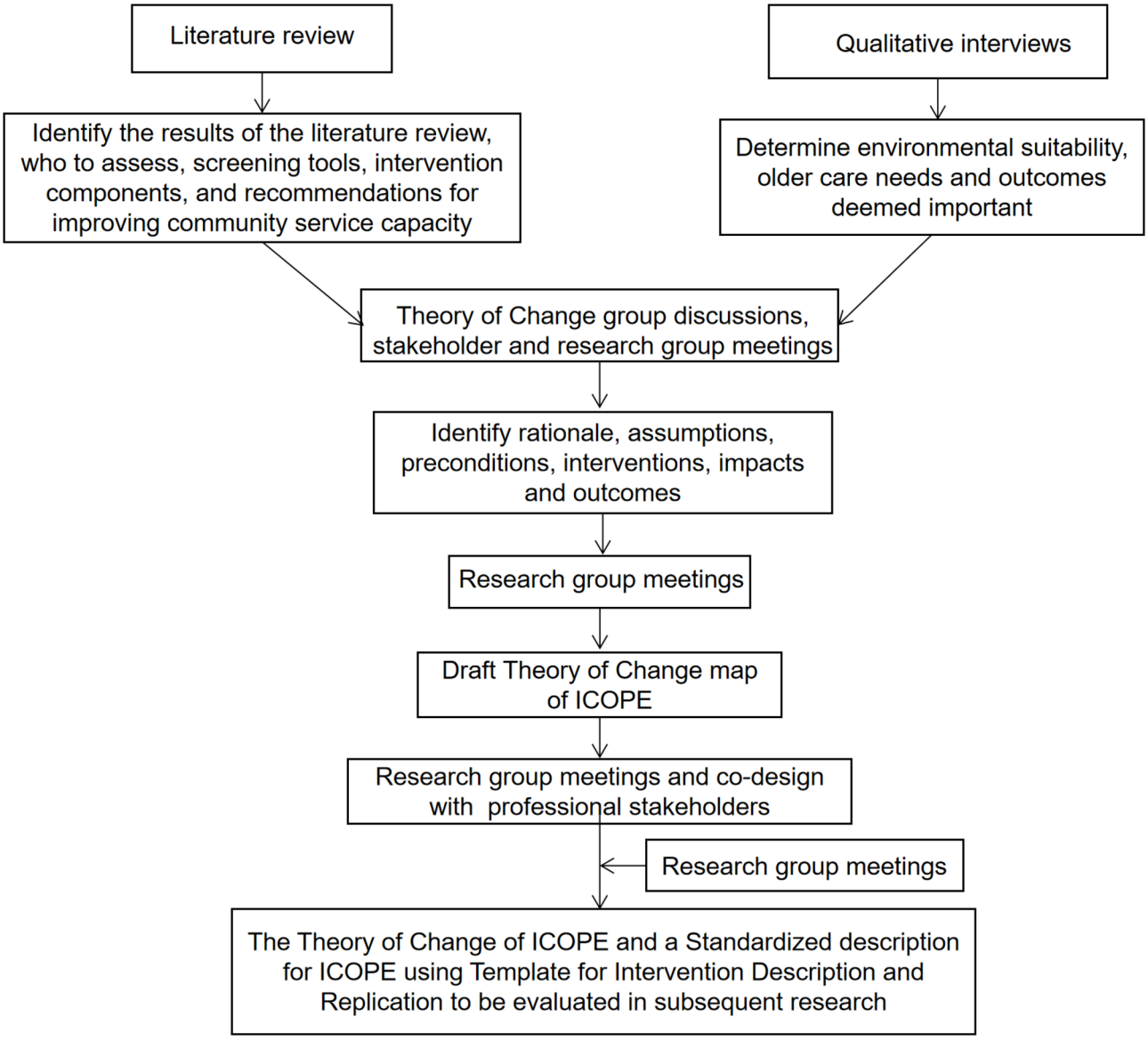

Fig. 1 Integrated process of development and modeling for the ToC

results of qualitative interviews and the first workshop, a draft ToC was developed [20]. Subsequent workshops were attended by the professionals and the stakeholders who asked questions and discussed the identified topics, allowing new ideas and content to emerge during the process, which were recorded and summarized in written by the workshop leader. At the end of each workshop, the research team leader was required to draft the ToC and discuss it with the research team (geriatric nursing researchers and information technology technicians). The draft ToC summarizing the last discussion was presented at the next workshop. After the final workshop, the research team discussed and reviewed the formulation and content of the various parts of the formulated ToC of integrated care of OP. All the interviews and workshops were recorded.

Data integration

A coding method for partial deduction and partial induction of data documents was conducted through MS Excel [21]. For interviews with the older participants, the data analysis covers three key areas: the needs and outcomes of home care, and how to improve the service capacity of community primary health service centers. For other stakeholders workshops, the data analysis focuses on the theoretical foundations, prerequisites, interventions, impact, and long-term outcomes of the ToC [22]. The expert opinions gathered at the workshops were selectively incorporated into the ToC drafted after discussions

Table 1 The ToC workshop attendance by stakeholders

	Workshop-1	Workshop-2	Workshop-3	Workshop-4	Workshop-5
Facilitators	2	2	2	2	3
Workshop stakeholders(total)	20	18	26	22	30
Neighborhood of experts					
Geriatric care	3	3	5	4	4
Public health management	1	1	1	1	1
Elderly health and chronic disease management	1	1	2	1	2
Rehabilitation and quality of life	4	1	2	0	2
Evidence-based nursing	2	2	1	1	1
Psychogeriatric-mental health	1	0	2	2	3
Health management	0	2	3	4	4
Hospice	2	1	2	1	2
Rehabilitation Therapist	1	0	2	2	3
Senior Engineer	0	3	0	0	2
Others (social volunteers, caregivers)	3	2	4	4	3
Focus of the workshop					
Contextual factors	√	√	√	√	√
Rationale	√	√	√	√	√
Screening tools available to medical staff	×	×	√	×	×
Individualized nursing care plan for OP	×	×	√	√	√
Projected impact	√	√	×	×	×
Outcomes (preconditions)	×	√	√	×	×

by the research team, and the research team repeatedly reviewed the ToC of integrated care of OP based on relevant literature and theories until a consensus was reached. This resulted in a ToC map and an accompanying standardized description of the intervention using the TIDieR checklist. During the data analysis, some relevant but unable to be encoded data according to a predetermined coding scheme were encoded additionally. These codes were then categorized inductively to form themes and subthemes.

Ethics

This study was approved by the Medical Ethics Committee of Zhejiang Hospital [2022. No. (34 K)]. The interviewees gave verbal informed consent before transcription. The relevant professionals and other stakeholders gave written informed consent before attending the ToC workshops.

Results

Participant characteristics

The research team conducted two group discussions ($n=11$, median age 38 years, with females $n=9$). Semi-structured interviews were conducted with OP ($n=6$, median age 74 years, $n=4$ females) and family carers ($n=5$, median age 54 years, $n=4$ females), and the results of these interviews on their needs and expectations of integrated care are collated and considered in the ToC for the ICOPE (Table 2). A series of 5 ToC workshops conducted consecutively with attendees of professionals and other stakeholders and each lasting from 60 to 120 min. The general characteristics of the workshop participants are shown in Table 1.

Intervention theory of change

Based on the elements of the ToC, the workshop participants agreed that the intended impact of the project is to provide holistic, long-term, specialized care to OP, and that the proposed long-term outcomes included reducing unnecessary hospitalizations, increasing the use of referral services, and enhancing self-care to delay the decline of OPs' intrinsic capacity, thereby improving the quality of life of homebound OP. The prerequisites including OP, family caregivers, healthcare professionals, and the level of the healthcare system were proposed, but we were unable to identify criteria for the prerequisites due to the limited data available. Such criteria would be proposed through testing the feasibility of the intervention in the next phase of study. The relationships between the results, underlying assumptions, and hypothesized pathways of change are depicted in the ToC diagram (Fig. 2). The results of each ToC workshop are summarized in Table 3.

At the beginning of the intervention, the stakeholders in the relevant neighborhood needed to be identified, including home care services, hospitals (emergency, geriatrics, nutrition, rehabilitation), and social welfare agencies, including but not limited to physicians and nurses. The home care service agency and relevant hospital departments were willing to cooperate with and

Table 2 Qualitative interviews on integrated home care services for older people

Theme	Subtheme	Description of specific content	Mapping in ICOPE
Diverse needs for elderly integrated care services	Health knowledge needs	The OP lack expertise on disease prevention, rehabilitation exercises, medication management, etc. It is desirable to have access to regular health education and guidance, especially in areas such as chronic disease management.	Multidisciplinary team collaboration; Encouraging follow-up (establishing regular contact).
	security needs	Safety in the home environment is crucial for OP. They place a high priority on fall prevention and desire regular assessments of their home environment, along with professional recommendations for modifications.	Add home environment assessment to comprehensive assessment and home environment modification to integrated care plan.
	Continuity and long-term care needs	The OP need continuity of professional nursing support, especially during recovery from surgery or illness, and they would like to have regular at-home integrated care services, including health monitoring, rehabilitation guidance, medication management, and so on.	Follow-up (establish long-term contact).
Outcomes of integrated care services valued	Improvement in quality of life	The OP expect integrated care services to enhance quality of life, including improvements in physical health, mental health and socialization.	Individualized integrated care plan.
	Assessment and ongoing follow-up	The OP hope to have a professional rehabilitation assessment mechanism that can promptly identify changes in their health conditions and provide referral services.	Screening and assessment training; referrals to appropriate medical facilities based on assessment results and need for resources.
Psychological needs and emotional support	Emotional comfort and psychological counseling	The OP hope that integrated care services include psychological care and support to alleviate loneliness or low mood. Services such as psychological counselling and mutual help groups are provided.	Increased awareness and acceptance of research in primary healthcare service centers, and collaborate, using community resources (providing counselling, group activities, etc.), and social volunteers to participate together.
	Optimizing support for family caregivers	Family members lack professional caregiving skills in caring for OP and thus bear a huge psychological and caregiving burden. It would be very beneficial if integrated care services provided appropriate skills training and emotional support to family caregivers to reduce the caregiving burden on family members.	Case managers conduct home care education to enrich home care skills and knowledge.
Enhancement of care service capacity and improvement of support network	Strengthening communication and information access	The OP feedback that due to communication barriers and insufficient timely access to information, they are unable to dynamically obtain the best integrated care plans.	Case managers enhance communication with OP and family caregivers. Acting as a bridge, case managers will link the multidisciplinary team and provide timely feedback on dynamically adjusted integrated care intervention plans.
	Enhancing the continuity and professional capacity of community care services	It is hoped that community-based health centres will strengthen the systematic training of nursing staff and become more professional.	Training of community-based health centre personnel, social volunteers.

support the intervention. The case managers had a full understanding of the intervention based on the ability to identify, assess, and provide in-home services. When an OP needs a referral, a skilled nursing service provider needs to be contacted. The first prerequisite to be met is that the geriatric care practitioners have a willingness to enhance the intrinsic abilities of OP and improve the quality of life of the OP living at home, and that they are able to identify OP in need of home care and family caregivers based on the prescreening criteria (see Table 4 for details on the inclusion criteria).

The intervention components were identified based on systematic reviews, interviews, and workshops. The intervention included materials and procedures, providers, and modalities for each component (Table 4). Other prerequisites included the willingness of the OP to receive integrated home health care services, availability of sufficient resources and time for the intervention, and a multidisciplinary team to provide individualized care support.

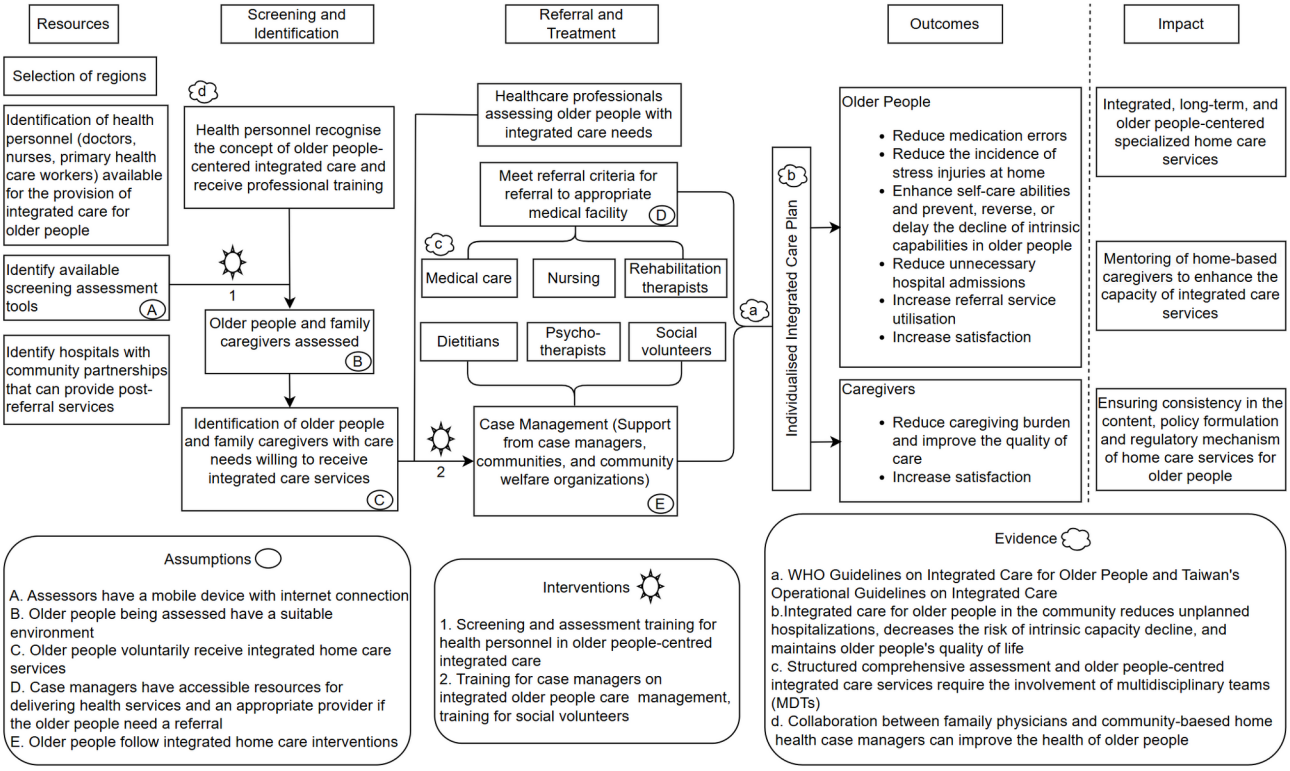

Fig. 2 The theory of change map of integrated care for older people

Discussion

With the rapidly growing demand for long-term care for the OP, a survey in China indicates that over 40% of home-bound OP need long-term care services. However, basic health services provided by communities are relatively scarce, with less than one-third of OP receiving home visits and health education services from the community, and less than 10% of these services involve personal care or psychological counseling [23, 24]. This suggests that despite the increasing demand for community-based home care services, there is still a significant gap in the coverage and quality of existing services. In China, integrating healthcare and community service resources to provide comprehensive services, including hospitalization, rehabilitation, and specialized ongoing living care, has become central to the development of services for the OP [25]. This study redesigns the implementation of ICOPE in the Zhejiang Province of China using the ToC approach, aiming to provide specialized, integrated, and continuous home care services for OP with complex care needs and their family caregivers. In this process, we faced a series of challenges and limitations. Firstly, uneven resource allocation and a shortage of professional personnel limit the dissemination and quality of services. Secondly, existing service models struggle to meet the diverse and personalized care needs of the elderly. Additionally, the complexity of service integration, including cross-sector collaboration and information sharing, is a challenge that needs to be overcome in the implementation of ICOPE. To address these challenges, we employed the ToC approach, which has the advantage of providing a clear theoretical foundation and practical guidance for the implementation of ICOPE through explicit causal pathways and active involvement of stakeholders. Through consecutive workshops, we identified the prerequisites needed to achieve long-term outcomes and designed comprehensive care interventions for OP with home care needs and their family caregivers. The components of these interventions were operationalized and systematically described according to the Template for Intervention Description and Replication (TIDieR), thereby improving the ICOPE theory and design that takes into account regional differences and brings significant health benefits to home-bound OP.

During the workshops, the stakeholders were involved in identifying a number of interventions for home care, discovering a number of intervention components that had not been explicitly presented in previous interventions for home care of OP, such as the step of an incentive mechanism for the involvement of relevant professionals in the intervention. In addition, we integrated care approaches from different disciplines, such as a multidisciplinary team model combining geriatrics and community-based rehabilitation care [26, 27], as well as combining goal-directed active care and individualized

Table 3 Outline of discussion and summary of the outcomes of the theory of change workshop

Workshop	Main neighborhoods	Outputs
Workshop-1	Introducing the topic-the stakeholders were asked: if you were an OP, what kind of care would you like to receive and what kind of impact would it have? Making final decisions about the impact of integrated care for OP.	Three practical implications of the integrated care for the OP programme were identified: (1) to provide holistic, long-term, elderly-centered, and specialized home care services; (2) to provide work guidance to home care workers, thereby enhancing their capacity to provide integrated care services; and (3) to ensure consistency in the content of home care services for the OP, policy development, and regulatory mechanisms.
Workshop-2	Defining long-term results: What are the prerequisites or intermediate outcomes needed to achieve long-term outcomes? Consensus on long-term outcomes for integrated care of the OP.	We identified three aspects of the results, including reductions in unnecessary hospitalizations and increased use of referral services; increased self-care capacity to prevent, reverse, or delay the decline in intrinsic abilities of OP; and improved quality of life for OP living at home. All of the above are important patient-related outcomes. Long-term outcomes related to home care are reduced caregiving burden on caregivers and improved caregiving. Identify prerequisites for achieving long-term outcomes, such as OP, healthcare professionals, level of the healthcare system, to name but a few. (Fig. 2)
Workshop-3	Identifying and describing those who provide integrated care for OP in primary health care system. Discussing the screening tools and describing the population in need of integrated care services in primary health care system. Exploring intervention design.	Identify case managers to assess, review, and provide in-home care. All homebound OP in need of care. Identify screening tools available to medical staff.
Workshop-4	The draft ToC was introduced, reviewed, and discussed in depth. Discussion of the content of the intervention. Assumptions required for successful implementation of the intervention.	The workshop agreed on five key assumptions: geriatric care practitioners had a desire to enhance the intrinsic capabilities of OP and the improved quality of life of homebound OP, rather than a disease-centered intervention philosophy; health personnel had accessible screening identification tools; OP were receptive and willing to receive integrated home health care services; services providing integrated geriatric care had sufficient resources and time to deliver the intervention; and the multidisciplinary team could provide individualized care support. Identified the intervention components (Table 4).
Workshop-5	The draft ToC was introduced, reviewed, and discussed in depth.	An integrated management model of assessment, planning, implementation, and evaluation had been developed.

comprehensive care plans [28]. The stakeholders agree that the focus of research interventions should be practical. The care of OP should go beyond the purely medical domain to include a broader range of daily activities in continuing treatment, personal life, values, needs and skills, integration into the life of the regional community [29], and the provision of individualized care plans by multidisciplinary teams is appropriate. In developing this intervention, there is a need to ensure that time and resources can be invested by those involved in the multidisciplinary team and that information sharing between the geriatric center and the community health service center can be achieved [30, 31]. Furthermore, the implementation of interventions is not only dependent on existing social resources, but also requires a number of additional conditions in which the primary health services providing comprehensive geriatric care have sufficient resources and time to carry out the intervention. However, it may be difficult to achieve in regions with a high healthcare burden. And resource constraints have been a significant barrier to improving healthcare delivery in low-or middle-income countries [32]. Nonetheless, the ToC of the ICOPE approach provided in this study articulates a hypothetical detailed and comprehensive pathway for implementation and organization. This detailed information is considered as key to understand how the intervention works in clinical practice, which is available for examining possible impact and effectiveness in different resource contexts, and can provide a complete picture for replication and comparison with studies in other areas [14, 33, 34]. Informal feedback from the workshop participants indicated a desire for the project to continue and to refine the community-based integrated home care intervention in subsequent studies.

The interventions covered in this study also have regional considerations. The clear visibility of all steps in implementing change will enable a scientific readership in other countries to evaluate the extent to which the identified preconditions, assumptions or rationales are applicable in their own health care system, and to consider which elements are transferable and which need further adaptation. Therefore, we believe that there are several developed components of comprehensive home-based care interventions for OP that could be transferred to other countries, particularly some middle-to high-income countries where primary health care delivery systems are relatively well established. Although geriatric care is provided in primary health care services, it is

Table 4 Summary description of comprehensive geriatric care interventions based on the tidier checklist

Intervention components	Materials	Procedures	Intervention providers	Modes of delivery	Locations	When and how much	Tailoring	Planned fidelity
1. Formation of multidisciplinary team. Established links with staff in community home care services and hospital geriatric departments	Provided a written description of the research programs	Creating opportunities for participation in structured intervention programs	Researchers	Multidisciplinary team face-to-face meeting	Hospital meeting room or community meeting room	Before the start of the study	Timing and location of meetings	Number of participants attended and topics discussed
2. Increased awareness and acceptance of research in primary health-care service centers	Information brochures for intervention program	Network information or meeting	Researchers	E-mail or face-to-face group meetings	In the region	Before the start of the study	–	Number of copies of research programs distributed
3. Training of case managers in integrated geriatric care	Requirements and materials for training	Caregiving training courses; Counseling	Clinical experts and researchers	Face-to-face group meetings or video conferences	Face-to-face or online	Peer counseling: independent screening qualification after assessing for OP more than 100. Training program: 240 h of theoretical and practical training completed before the study (within 3 months). Provide materials related to basic geriatric nursing knowledge and operational skills	Timing and location of training	Training sessions: number of participants attended and topics discussed
4. Motivated and guided hospital health and social care staff to identify eligible OP	Inclusion and exclusion criteria; Screening identification tools	Encouraging stakeholders to co-design inclusion criteria and identify screening tools	Researchers	Face-to-face group meetings	Hospital or community	Before the study and ongoing meetings	Timing and location of meeting	Number of participants attended and topics discussed
5. Timely identification of OP and their family caregivers with integrated home care needs	Inclusion Criteria (OP with intrinsic capacity: positive screening in any aspect of Cognitive capacity, Hearing capacity, Visual capacity, Locomotor Capacity, Psychological Capacity, Vitality; OP over 60 years of age who live alone and whose ability to perform activities of daily living (ADLs) is assessed to be below normal; People with specialized needs; and people with more than one geriatric syndrome	Screening of OP with home care needs	Health care workers and community health service providers	Face-to-face group meetings	Hospital or community	Daily (8:00 a.m.-17:00 p.m.)	Time for screening	–

Table 4 (continued)

Intervention components	Materials	Procedures	Inter-vention providers	Modes of delivery	Locations	When and how much	Tailoring	Planned fidelity
6. Informing and guiding interventions for OP and family caregivers	Informational letter on home care services, care record sheets and recommendations for changes in care plans, health records	Notifying OP and family caregivers and obtaining informed consent	Case manager	Face-to-face meetings	Hospital or community	Ongoing	Duration of the case manager visit(30–60 min)	–
7. Encouraged the involvement of home care providers in the intervention, including doctors, nurses and caregivers	Home Care Intervention Program Information booklet and Incentive mechanisms	Obtaining the informed consent of the person concerned	Researchers	Telephone calls	In the region	Ongoing	Timing for researchers to convene relevant home care providers	–
8. Follow-up (establish long-term contact)	Visitation record	Dynamic assessment and home care education to enrich home care skills and knowledge	Case manager	Face-to-face or Telephone calls	Home or community	Weekly telephone follow-ups, monthly face-to-face follow-ups	Duration of the case manager visit(30–60 min)	–

usually limited for care for diseases and symptoms, and certain care needs still seem to be unmet [35]. Multidisciplinary collaboration, case management, continuity of care, and person-centered holistic care among interventions are considered important approaches to community-based care for OP [36]. Moreover, it is worth noting that with the development of information and communications technology (ICT), ICT-based community-smart elderly service platform provides the possibility for truly realizing healthy aging [37, 38]. The next phase of the study requires not only operationalizing and evaluating the different elements of the intervention, but also, and more importantly, building an intelligent home care management platform to improve communication and data transfer for screening assessments, comprehensive medical care plans, and health decision-making for OP, to providing them with high-quality personalized geriatric home care [39].

This study also has several limitations. First, our selected OP and caregivers were not involved in the actual change process, although face-to-face interviews were conducted upfront to ensure their involvement. In addition, new themes for service delivery for OP with hearing disabilities, which were raised by a stakeholder at the workshops, were not included given the practicalities. This may have resulted in failure to meet the needs of certain special OP. Finally, while the ToC can provide detailed and comprehensive hypothetical pathways for implementation and organization, it remains a simplification of the complex real world, and there is not yet enough evidence to prove that interventions guided by this approach lead to effective intervention outcomes. Post-intervention effectiveness is influenced by the real-world availability of the identified prerequisites. Therefore, it remains to be studied whether this integrated development approach can guide process evaluation and improve intervention effectiveness. Our research team is already conducting a pilot randomized controlled trial to validate the feasibility and effectiveness of an integrated care intervention for OP, and our ToC will be followed up and adapted based on the results of subsequent studies.

Conclusions

This study developed the WHO ICOPE integrated care program for the OP and the family caregivers of using the ToC approach, and the results are consistent with the healthy aging goals of the ICOPE. The recruited stakeholders agreed on the intervention and felt that the model has the potential to get successfully implemented and benefit OP with home-based care needs and the caregivers. In addition, a comprehensive systematic description of the intervention components, outcomes, and prerequisites improve the replicability of this study.

Abbreviations

ICOPE	Integrated Care for Older People
ICT	Information and communications technology
OP	Older People
TIDieR	Template for Intervention Description and Replication
ToC	Theory of Change
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12877-025-05956-z.

Supplementary Material 1

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Author contributions

YSL, LJB, and LBY were responsible for literature review and organization, CLY and HSJ were responsible for qualitative interviews and data analysis, JBY and HSJ were responsible for organizing group discussions, LCX and JXQ were responsible for contacting the experts and hosting the seminar, JBY and CLY were responsible for organizing the seminar's comments, LCX was responsible for the research design, JBY and LBY were responsible for drafting the article, and LWM and HYX were responsible for reviewing the article. All authors reviewed the manuscript.

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Data availability

Important data generated or analyzed during this study are included in this published article, and additional datasets generated during the study can be requested from the corresponding author if needed.

Declarations

Ethics approval and consent to participate

The Ethics Committee of Zhejiang Hospital approved this study [2022. No. (34 K)]. At the beginning of the study, all participants were informed of the purpose of the study and their right to participate voluntarily. The interviewees gave verbal informed consent before transcription. The relevant professionals and other stakeholders gave written informed consent before attending the ToC workshops. All methods were performed in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Department of Nursing, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[2]Department of Traditional Chinese medicine, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[3]Department of Geriatric Medicine, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[4]Department of Emergency Medicine, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[5]Department of Rehabilitation Medicine, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[6]Department of Traditional Chinese-Western combined hospice unit, Primary Health Care Center, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China
[7]Department of endocrinology medicine, Zhejiang Hospital, No. 1229, Gudun Road, Xihu District, Hangzhou, Zhejiang, China

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